

# GMAW

## *Push-Pull Gun*

# IM875

MK 091-0564  
September 2005  
Rev A.

### OPERATOR'S MANUAL

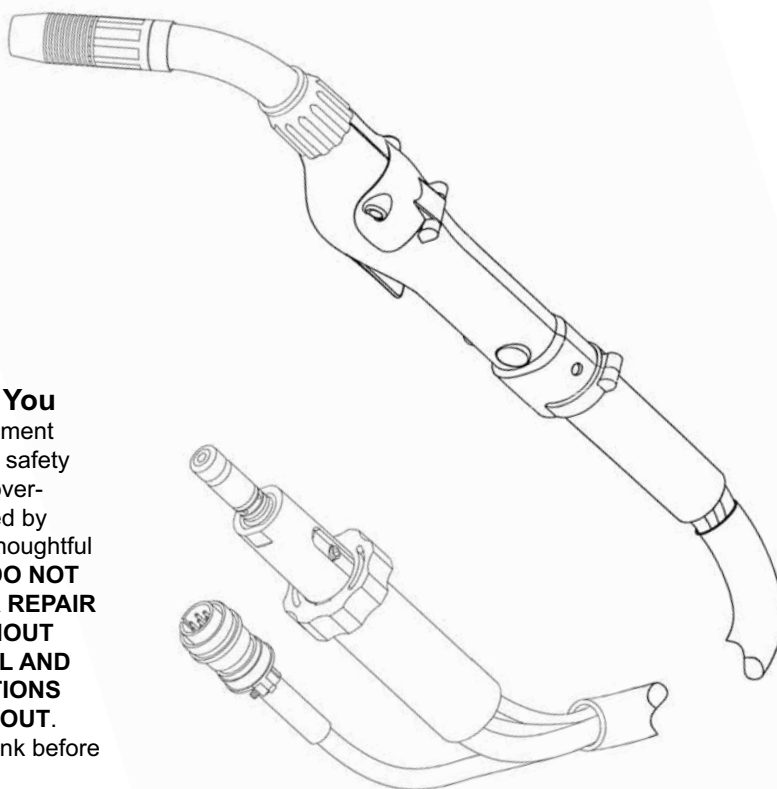
# Python<sup>®</sup> -Plus

*Model number K2447-1, K2447-2, K2447-3*

#### **Safety Depends on You**

Lincoln arc welding equipment is designed and built with safety in mind. However, your overall safety can be increased by proper installation...and thoughtful operation on your part. **DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING THIS MANUAL AND THE SAFETY PRECAUTIONS CONTAINED THROUGHOUT.**

And, most importantly, think before you act and be careful.



### OPERATOR'S MANUAL

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**ELECTRIC**

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## SAFETY

### WARNING



#### CALIFORNIA PROPOSITION 65 WARNINGS



Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

The Above For Diesel Engines

The Above For Gasoline Engines

**ARC WELDING CAN BE HAZARDOUS. PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS SHOULD CONSULT WITH THEIR DOCTOR BEFORE OPERATING.**

Read and understand the following safety highlights. For additional safety information, it is strongly recommended that you purchase a copy of "Safety in Welding & Cutting - ANSI Standard Z49.1" from the American Welding Society, P.O. Box 351040, Miami, Florida 33135 or CSA Standard W117.2-1974. A Free copy of "Arc Welding Safety" booklet E205 is available from the Lincoln Electric Company, 22801 St. Clair Avenue, Cleveland, Ohio 44117-1199.

**BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS.**



### FOR ENGINE powered equipment.

1.a. Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.



1.b. Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.



1.c. Do not add the fuel near an open flame welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.

1.d. Keep all equipment safety guards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.

1.e. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.



1.f. Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.

1.g. To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.



1.h. To avoid scalding, do not remove the radiator pressure cap when the engine is hot.



### ELECTRIC AND MAGNETIC FIELDS may be dangerous

2.a. Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines

2.b. EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.

2.c. Exposure to EMF fields in welding may have other health effects which are now not known.

2.d. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

2.d.1. Route the electrode and work cables together - Secure them with tape when possible.

2.d.2. Never coil the electrode lead around your body.

2.d.3. Do not place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.

2.d.4. Connect the work cable to the workpiece as close as possible to the area being welded.

2.d.5. Do not work next to welding power source.

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## ELECTRIC SHOCK can kill.

- 3.a. The electrode and work (or ground) circuits are electrically "hot" when the welder is on. Do not touch these "hot" parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.
- 3.b. Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.
- In addition to the normal safety precautions, if welding must be performed under electrically hazardous conditions (in damp locations or while wearing wet clothing; on metal structures such as floors, gratings or scaffolds; when in cramped positions such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with the workpiece or ground) use the following equipment:**
- Semiautomatic DC Constant Voltage (Wire) Welder.
  - DC Manual (Stick) Welder.
  - AC Welder with Reduced Voltage Control.
- 3.c. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically "hot".
- 3.d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.
- 3.e. Ground the work or metal to be welded to a good electrical (earth) ground.
- 3.f. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.
- 3.g. Never dip the electrode in water for cooling.
- 3.h. Never simultaneously touch electrically "hot" parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.
- 3.i. When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.
- 3.j. Also see Items 6.c. and 8.



## ARC RAYS can burn.

- 4.a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87.1 standards.
- 4.b. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- 4.c. Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.



## FUMES AND GASES can be dangerous.

- 5.a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. **When welding with electrodes which require special ventilation such as stainless or hard facing (see instructions on container or MSDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and below Threshold Limit Values (TLV) using local exhaust or mechanical ventilation. In confined spaces or in some circumstances, outdoors, a respirator may be required. Additional precautions are also required when welding on galvanized steel.**
- 5.b. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.
- 5.c. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.
- 5.d. Read and understand the manufacturer's instructions for this equipment and the consumables to be used, including the material safety data sheet (MSDS) and follow your employer's safety practices. MSDS forms are available from your welding distributor or from the manufacturer.
- 5.e. Also see item 1.b.

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### WELDING SPARKS can cause fire or explosion.

- 6.a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.
- 6.b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to "Safety in Welding and Cutting" (ANSI Standard Z49.1) and the operating information for the equipment being used.
- 6.c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.
- 6.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned". For information, purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", AWS F4.1 from the American Welding Society (see address above).
- 6.e. Vent hollow castings or containers before heating, cutting or welding. They may explode.
- 6.f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.
- 6.g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.
- 6.h. Also see item 1.c.



### CYLINDER may explode if damaged.

- 7.a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.
- 7.b. Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.
- 7.c. Cylinders should be located:
  - Away from areas where they may be struck or subjected to physical damage.
  - A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.
- 7.d. Never allow the electrode, electrode holder or any other electrically "hot" parts to touch a cylinder.
- 7.e. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.
- 7.f. Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.
- 7.g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-1, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association 1235 Jefferson Davis Highway, Arlington, VA 22202.



### FOR ELECTRICALLY powered equipment.

- 8.a. Turn off input power using the disconnect switch at the fuse box before working on the equipment.
- 8.b. Install equipment in accordance with the U.S. National Electrical Code, all local codes and the manufacturer's recommendations.
- 8.c. Ground the equipment in accordance with the U.S. National Electrical Code and the manufacturer's recommendations.

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## PRÉCAUTIONS DE SÛRETÉ

Pour votre propre protection lire et observer toutes les instructions et les précautions de sûreté spécifiques qui paraissent dans ce manuel aussi bien que les précautions de sûreté générales suivantes:

### Sûreté Pour Soudage A L'Arc

1. Protégez-vous contre la secousse électrique:
  - a. Les circuits à l'électrode et à la pièce sont sous tension quand la machine à souder est en marche. Eviter toujours tout contact entre les parties sous tension et la peau nue ou les vêtements mouillés. Porter des gants secs et sans trous pour isoler les mains.
  - b. Faire très attention de bien s'isoler de la masse quand on soude dans des endroits humides, ou sur un plancher métallique ou des grilles métalliques, principalement dans les positions assis ou couché pour lesquelles une grande partie du corps peut être en contact avec la masse.
  - c. Maintenir le porte-électrode, la pince de masse, le câble de soudage et la machine à souder en bon et sûr état de fonctionnement.
  - d. Ne jamais plonger le porte-électrode dans l'eau pour le refroidir.
  - e. Ne jamais toucher simultanément les parties sous tension des porte-électrodes connectés à deux machines à souder parce que la tension entre les deux pinces peut être le total de la tension à vide des deux machines.
  - f. Si on utilise la machine à souder comme une source de courant pour soudage semi-automatique, ces précautions pour le porte-électrode s'appliquent aussi au pistolet de soudage.
2. Dans le cas de travail au dessus du niveau du sol, se protéger contre les chutes dans le cas où on recoit un choc. Ne jamais enrouler le câble-électrode autour de n'importe quelle partie du corps.
3. Un coup d'arc peut être plus sévère qu'un coup de soliel, donc:
  - a. Utiliser un bon masque avec un verre filtrant approprié ainsi qu'un verre blanc afin de se protéger les yeux du rayonnement de l'arc et des projections quand on soude ou quand on regarde l'arc.
  - b. Porter des vêtements convenables afin de protéger la peau de soudeur et des aides contre le rayonnement de l'arc.
  - c. Protéger l'autre personnel travaillant à proximité au soudage à l'aide d'écrans appropriés et non-inflammables.
4. Des gouttes de laitier en fusion sont émises de l'arc de soudage. Se protéger avec des vêtements de protection libres de l'huile, tels que les gants en cuir, chemise épaisse, pantalons sans revers, et chaussures montantes.
5. Toujours porter des lunettes de sécurité dans la zone de soudage. Utiliser des lunettes avec écrans latéraux dans les

zones où l'on pique le laitier.

6. Eloigner les matériaux inflammables ou les recouvrir afin de prévenir tout risque d'incendie dû aux étincelles.
7. Quand on ne soude pas, poser la pince à un endroit isolé de la masse. Un court-circuit accidentel peut provoquer un échauffement et un risque d'incendie.
8. S'assurer que la masse est connectée le plus près possible de la zone de travail qu'il est pratique de le faire. Si on place la masse sur la charpente de la construction ou d'autres endroits éloignés de la zone de travail, on augmente le risque de voir passer le courant de soudage par les chaînes de levage, câbles de grue, ou autres circuits. Cela peut provoquer des risques d'incendie ou d'échauffement des chaînes et des câbles jusqu'à ce qu'ils se rompent.
9. Assurer une ventilation suffisante dans la zone de soudage. Ceci est particulièrement important pour le soudage de tôles galvanisées plombées, ou cadmiées ou tout autre métal qui produit des fumées toxiques.
10. Ne pas souder en présence de vapeurs de chlore provenant d'opérations de dégraissage, nettoyage ou pistolage. La chaleur ou les rayons de l'arc peuvent réagir avec les vapeurs du solvant pour produire du phosgène (gas fortement toxique) ou autres produits irritants.
11. Pour obtenir de plus amples renseignements sur la sûreté, voir le code "Code for safety in welding and cutting" CSA Standard W 117.2-1974.

## PRÉCAUTIONS DE SÛRETÉ POUR LES MACHINES À SOUDER À TRANSFORMATEUR ET À REDRESSEUR

1. Relier à la terre le châssis du poste conformément au code de l'électricité et aux recommandations du fabricant. Le dispositif de montage ou la pièce à souder doit être branché à une bonne mise à la terre.
2. Autant que possible, l'installation et l'entretien du poste seront effectués par un électricien qualifié.
3. Avant de faire des travaux à l'intérieur de poste, la débrancher à l'interrupteur à la boîte de fusibles.
4. Garder tous les couvercles et dispositifs de sûreté à leur place.



## INSTRUCTIONS FOR ELECTRO-MAGNETIC COMPATIBILITY

### Conformance

Products displaying the C-Tick mark are in conformity with Australian/New Zealand requirements for Electromagnetic Compatibility (EMC) according to standard (emission) AS/NZS 3652 "Electromagnetic Compatibility – Arc Welding Equipment".

Products displaying the CE mark are in conformity with European Community Council Directive 89/336/EEC requirements for EMC by implementing EN50199 "Electromagnetic Compatibility (EMC) – Product standard for arc welding equipment".

#### Products are:

- For use with other Lincoln Electric/LiquidArc equipment.
- Designed for industrial and professional use.

### Introduction

All electrical equipment generates small amounts of electromagnetic emission. Electrical emission may be transmitted through power lines or radiated through space, similar to a radio transmitter. When emissions are received by other equipment, electrical interference may result. Electrical emissions may effect many kinds of electrical equipment: other nearby welding equipment, radio and TV transmitters and receivers, numerical controlled machines, telephone systems, computers, etc. Be aware that interference may result and extra precautions may be required when a welding power source is used in a domestic establishment.

### Installation and Use

The purchaser/user is responsible for installing and using the welding equipment according to the manufacturer's instructions. If electromagnetic disturbances are detected then it shall be the responsibility of the purchaser/user of the welding equipment to resolve the situation with the technical assistance of the manufacturer. In some cases this remedial action may be as simple as earthing (grounding) the welding circuit (see note below). In other cases it could involve constructing an electromagnetic screen enclosing the power source and the work complete with associated input filters. In all cases electromagnetic disturbances must be reduced to the point where they are no longer troublesome.

**Note:** The welding circuit may or may not be earthed for safety reasons according to national codes. Changing the earthing arrangements should only be authorized by a person who is competent to assess whether the changes increase the risk of injury, eg. by allowing parallel welding current return paths which may damage the earth circuits of other equipment.

### Assessment of Area

Before installing welding equipment the purchaser/user shall make an assessment of potential problems in the surrounding area.

The following shall be taken into account:

- Other supply cables, control cables, signalling and telephone cables above, below and adjacent to the welding equipment;
- Radio and television transmitters and receivers;
- Computer and other control equipment;
- Safety critical safety equipment, eg. guarding of industrial equipment;
- The health of people around, eg. the use of pacemakers and hearing aids;
- Equipment used for calibration or measurement;
- The immunity of other equipment in the environment. The purchaser/user shall ensure that other equipment being used in the environment is compatible. This may require additional protection measures;
- The time of the day that welding or other activities are to be carried out.

The size of the surrounding area to be considered will depend on the structure of the building and other activities that are taking place. The surrounding area may extend beyond the boundaries of the premises.

### Methods of Reducing Emissions

#### Mains Supply

Welding equipment should be connected to the mains supply according to the manufacturer's recommendations. If interference occurs, it may be necessary to take additional precautions such as filtering the mains supply. Consideration should be given to shielding the supply cable of permanently installed welding equipment in metallic conduit or equivalent. Shielding should be electrically continuous throughout its length. The shielding should be connected to the welding power source so that good electrical contact is maintained between the conduit and the welding power source enclosure.

#### Maintenance of the Welding Equipment

The welding equipment should be routinely maintained according to the manufacturer's recommendations. All access and service doors and covers should be closed and properly fastened when the welding equipment is in operation. The welding equipment should not be modified in any way except for those changes and adjustments covered in the manufacturer's instructions. In particular, the spark gaps of arc initiation and stabilizing devices should be adjusted and maintained according to the manufacturer's recommendations.

#### Welding Cables

The welding cables should be kept as short as possible and should be positioned close together, running at or close to the floor level.

#### Equipotential Bonding

Bonding of all metallic components in the welding installation and adjacent to it should be considered. However, metallic components bonded to the work piece will increase the risk that the operator could receive a shock by touching these metallic components and the electrode at the same time. The operator should be insulated from all such bonded metallic components.

#### Earthing of the workpiece

Where the workpiece is not bonded to earth for electrical safety, nor connected to earth because of its size and position, eg. ship's hull or building steelwork, a connection bonding the workpiece to earth may reduce emissions in some, but not all instances. Care should be taken to prevent the earthing of work pieces increasing the risk of injury to users, or damage to other electrical equipment. Where necessary, the connection of the workpiece to earth should be made by direct connection to the workpiece, but in some countries where direct connection is not permitted, the bonding should be achieved by suitable capacitance, selected according to national regulations.

#### Screening and Shielding

Selective screening and shielding of other cables and equipment in the surrounding area may alleviate problems of interference. Screening of the entire welding installation may be considered for special applications.

Portions of the preceding text are extracted from:

- Australian/New Zealand standard AS/NZS 3652. Permission to reproduce has been granted by Standards Australia and Standards New Zealand. For further explanation, readers should be referred to the standard itself.
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# Thank You

For selecting a quality product. We want you to take pride in operating this product...as much pride as we have in bringing the product to you!

## **Please Examine Carton and Equipment For Damage Immediately**

When this equipment is shipped, title passes to the purchaser upon receipt by the carrier. Consequently, claims for material damaged in shipment must be made by the purchaser against the transportation company at the time the shipment is received.

Please record your equipment identification information below for future reference. This information can be found on your machine nameplate.

Model Name & Number \_\_\_\_\_

Code & Serial Number \_\_\_\_\_

Date of Purchase \_\_\_\_\_

Whenever you request replacements parts for, or information on this equipment always supply the information you have recorded above.

Read this Owner's Manual completely before attempting to use this equipment. Save this manual and keep it handy for quick reference. Pay particular attention to the safety instructions we have provided for your protection.

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## Section A



## Installation

### Technical Specifications

#### Wire Capacity

.030" - .045" (0.6mm - 1.2mm) solid and hard wire

.030" - 1/16" (0.8mm - 1.6mm) aluminum and cored wire

#### Wire Speed

800 IPM (20.3 mpm) Max. at rated feeder Input Voltage (120VAC / 42VAC)

#### Duty Cycle - 100% (*All ratings are using Argon Gas*)

**200 Amps/25 Volts**      Air cooled standard

#### Shipping Weight (approximate) - Air Cooled

15ft. (4.5m)..... 13.09 lbs. (5.94 Kg)

25ft. (7.6m)..... 19.29 lbs. (8.29 Kg)

50ft. (15.2m)..... 29.9 lbs. (13.19 Kg)

#### Torch weight (less leads)

Air/Water cooled - 2.5 lbs. (1.13 kilogram)

### Support Equipment Required

- C.V. or C.C. Power Source of sufficient capacity for your needs.
- Regulated gas supply and hoses.
- Properly sized power leads from power source to wire feeder and ground.

### Gun Lead Connections

#### Power Cable

A #2 AWG power cable is used on the Python-*Plus*. The gun end of the cable has a fitting crimped to the copper cable strands. This fitting is then threaded into the gun body. The cabinet end of the power cable is incorporated into the Power/Gas Adaptor.

#### Conduit

The Python-*Plus* comes standard with a poly-lined conduit, for feeding aluminum wire. The longer fitting with a shallow groove is used on the gun end. A set screw located on top of the gun handle secures the conduit in place. The cabinet end of the conduit is incorporated into the Power/Gas Adaptor.

#### Gas Hose

The gas hose is pushed over a barbed fitting on the gun body and secured with a plastic tie wrap. The cabinet end of the gas hose is incorporated into the Power/Gas Adaptor.

#### Electric Cable

A multi-conductor control cable is used on the Python-*Plus*. The gun end of the cable is secured with a cable clamp and the wires are connected to the potentiometer, the micro switch, the motor and the gun body mechanically. Slack is left in the electric cable as it exits the back of the gun to prevent cable and/or wire breakage. The cabinet end of the control cable uses a 7-Pin, Amphenol connector.

## Section B

## Operation

### General

The Python gun maintains a constant, steady, uniform wire feed speed, regardless of curved or looped wire conduit. The constant push exerted by the slave motor in the cabinet, combined with the pull of the torch motor, causes the wire to literally float friction-free through the wire conduit. The 24VDC torch motor is controlled by a three and three-quarter (3 3/4) turn potentiometer in the torch handle.

### Controls and Settings

#### Potentiometer

The laterally-positioned potentiometer is located in the lower end of the handle, providing up to 800 ipm with 3 3/4 turns.

#### Micro Switch

The micro switch assembly consists of the micro switch, and leads.

#### Trigger Sensitivity

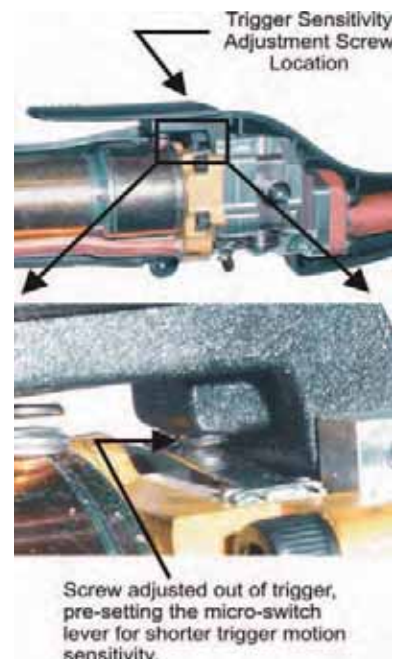
The amount of trigger level travel can be shortened for a "quicker" or "more responsive" action.

A more sensitive trigger lever is produced by reducing the gap between the trigger lever and the micro-switch lever. By turning-in the Trigger Sensitivity Adjustment Screw, it closed the gap between the trigger lever and the micro-switch lever.

This will enable the operator to increase the sensitivity of the trigger lever.

#### Sensitivity Adjustment

With the wire feeder turned on (with or without welding wire loaded), turn the screw in until the micro-switch is activated. Once activated, the gun and wire feeder motors will begin feeding wire. Retract the screw accordingly until the system is deactivated and adjusted to the operators' liking.



### Drive Roll and Idler Rolls

#### General

The Python gun comes standard with a knurled drive roll and a grooved idler roll, which will handle both steel and aluminum wire with diameters from .030-1/16 inch. Optional insulated V-groove drive rolls are also available for aluminum wire if desired (see Optional Kits).

Drive roll tension is accomplished with a unique spring-loaded pressure screw. The Python comes from the factory with the pressure adjustment screw preset. **NO ADJUSTMENT IS REQUIRED FOR ALL SIZES AND TYPES OF WIRES.**

## Drive Roll Installation/Removal

**NOTE: Neither of the handles needs to be removed to access the Drive or Idler Rolls.**

1. Pull the Cam Lever away from the idler roll. This will relieve the pressure against the drive roll (as shown in Figure 1).



Figure 1

2. Align the Drive Roll Removal Tool (P/N 931-0100) over the flats of the drive roll (as shown in Figure 2). Hold the torch with one hand or on a table top, with the other hand give the Removal Tool a quick snap-turn in the **CLOCKWISE DIRECTION**.



Figure 2

3. Once the drive roll is loose, continue to spin drive roll in the clockwise direction to remove the drive roll from the torch.
4. Install a new drive roll on the left-hand threaded shaft. The drive roll will self-tighten when it is feeding wire.

## Idler Roll Installation and Removal

(Reference Figure 3)

1. Using a slot type screwdriver, loosen idler screw, taking care not to lose lock washer under idler roll.
2. Insert new idler roll and lock washer onto screw, insuring that idler groove is toward top and lock washer is beneath.

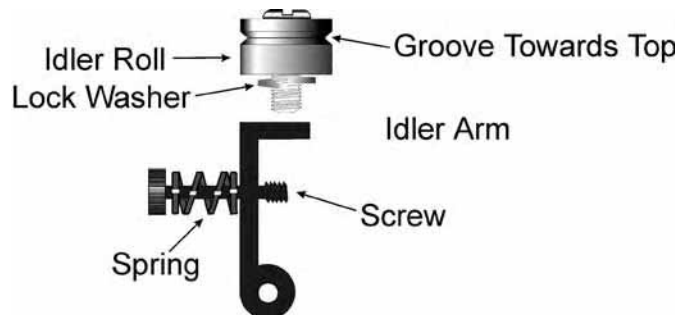


Figure 3

3. Tighten.

**NOTE: Lock washer must be under idler roll or it will not turn freely.**



## Section C

## Accessories/Options

LE P/N

MK P/N

Insulated Drive Roll Kits are used to prevent preheating of the wire which may soften it and clog the liner. This picking up of current at the drive rolls rather than at the contact tip is usually not a problem unless using too large of a contact tip or excessively oxidized aluminum wire.

**Insulated Groove Drive Roll Kit.....KP1594-030 ..... 005-0640**

For **.030"** (0.8mm) dia. aluminum wire. Includes insulated groove drive roll and insulated idler roll assy.

**Insulated Groove Drive Roll Kit.....KP1594-035 ..... 005-0641**

For **.035"** (0.9mm) dia. aluminum wire. Includes insulated groove drive roll and insulated idler roll assy.

**Insulated Groove Drive Roll Kit..... n/a ..... 005-0642**

For **.040"** (1.0mm) dia. aluminum wire. Includes insulated groove drive roll and insulated idler roll assy.

**Insulated Groove Drive Roll Kit.....KP1594-3/64 ..... 005-0643**

For **.045"** (1.2mm) dia. aluminum wire. Includes insulated groove drive roll and insulated idler roll assy.

**Insulated Groove Drive Roll Kit.....KP1594-1/16 ..... 005-0644**

For **.062"** (1.6mm) dia. aluminum wire. Includes insulated groove drive roll and insulated idler roll assy.

**Handle Kit.....005-0699**

Includes left and right handles, screws and drive roll door.

**Trigger Kit.....005-0694**

Trigger adjustment kit includes a spring and sensitivity adjustment screw replacement for all Python-*Plus* guns.

**Micro Switch Kit.....005-0701**

Replacement micro switch assembly for all Python guns.

**Potentiometer Kit.....005-0695**

Replacement potentiometer assembly for all Python guns.

### **Snake Skins®**

Snake Skin® protective covers are now standard on all guns. You may order spare replacement covers to protect the lead assy of the torch when the factory one becomes damaged or worn. It can easily be replaced in the field by means of Velcro®.

Snake Skin Cover 13ft (for 15ft leads) ..... **931-0110**

Snake Skin Cover 23ft (for 25ft leads) ..... **931-0122**

Snake Skin Cover 48ft (for 50ft leads) ..... **931-0123**

## Contact Tips



Contact Tip - 3/8" Diameter					
LE P/N	MK P/N	Wire Size	Tip ID	Arc	Tip Length
KP2217-1B1	621-0390	.030"(0.8mm)	.040"(1.0mm)	Spray	1.57"(39.9mm)
--	621-0396	.030"(0.8mm)	.040"(1.0mm)	Short	1-7/8"(47.6mm)
KP2217-2B1	621-0391	.035"(0.9mm)	.045"(1.1mm)	Spray	1.57"(39.9mm)
--	621-0397	.035"(0.9mm)	.045"(1.1mm)	Short	1.82"(46.2mm)
--	621-0392	.047"(1.2mm)	.054"(1.37mm)	Spray	1.57"(39.9mm)
--	621-0398	.047"(1.2mm)	.054"(1.37mm)	Short	1.82"(46.2mm)
KP2217-4B1	621-0393*	.047"(1.2mm)	.060"(1.5mm)	Spray	1.57"(39.9mm)
--	621-0399	.045" or .052"	.060"(1.5mm)	Short	1-7/8"(47.6mm)
KP2217-5B1	621-0394	1/16"(1.6mm)	.074"(1.9mm)	Spray	1.57"(39.9mm)
--	621-0400	1/16"(1.6mm)	.074"(1.9mm)	Short	1-7/8"(47.6mm)
--	621-0395	1/16"(1.6mm)	.085"(2.16mm)	Spray	1-5/8"(41.3mm)

\*Standard - furnished with torch.

To Remove contact tip when using full water cooled gas cup (P/N 621-0065), contact tip removal tool (P/N 931-0002) must be used.

## Finned Copper Cups



Finned Copper Gas Cups			
Cup Size	Cup I.D.	MK P/N	LE P/N
No. 6	3/8" (9.25mm)	621-0248	KP2213-1
No. 8	1/2" (12.7mm)	621-0249	KP2214-1
No. 10*	5/8" (15.8mm)	621-0250	KP2215-1

Heavy Duty Finned Copper Gas Cups			
Cup Size	Cup I.D.	MK P/N	LE P/N
No. 10	5/8" (15.8mm)	621-0251	KP2216-1
No. 12	3/4" (19.0mm)	621-0252	--

\*Standard - furnished with torch

Torch Barrel Liners	
Part Number	Description
LE KP2244-1 MK 621-0424	Tip Extender (Air/Water cooled barrel only)
615-0178	Bulk Teflon Liner
LE KP2226-1 MK 931-0137	Liner Package, 5 pieces

## Section D

### Barrel Assemblies

All barrels are rated at 100% duty cycle

#### Barrels

##### Air Cooled

The Python-*Plus* guns come standard with a 60° curved barrel. The barrel assembly locks to the Python® body using the patented EZ Lock™ system.



200 Amps  
(LE P/N KP2225-1  
MK P/N 003-2147)

#### Barrel Removal and Installation

To remove the barrel assembly, loosen the patented EZ Lock™ Taper lock nut until it is clear of the threads. Pull barrel out of the gun body.

To replace a barrel assembly, open the drive and idler roll door and seat the barrel assembly until the inlet guide is almost touching the drive and idler roll and the rear face of the barrel is flush with the aluminum body block. Take care not to damage the “O” rings when inserting into the body. Tighten taper lock nut assembly firmly so that barrel cannot rotate.

#### Barrel Rotation

To rotate a barrel assembly, loosen the patented EZ Lock™ Taper lock nut assembly no more than 1 turn. Rotate barrel to the position of your choice and retighten taper lock nut assembly firmly so that the barrel cannot rotate.

**WARNING: Do not attempt to weld without the barrel being tightly secured in the torch body, or damage to the barrel or body may result.**

### Maintenance

#### Periodic Maintenance

Your Cobramatic® System is designed to provide years of reliable service. Maintenance of the torch will normally consist of a general cleaning of the wire guide system, including barrels, drive rolls, and conduits at regular intervals.

Remove spatter build-up from inside of nozzles with a hardwood stick.

The only parts on the Cobramatic® system that are subject to normal wear are the conduit, contact tips, gas cups, front body liners, wire guides, drive and idler rolls. A supply of these parts should be maintained on hand.

The number of units in operation and the importance of minimal “down time” will determine to what extent spare parts should be stocked on hand. See the “Recommended Spare Parts List” for the most commonly replaced parts.

If repairs do become necessary, qualified shop maintenance personnel can easily replace any part.

Maintenance Tools	
Tool	Part Number
Drive Roll Removal Tool	931-0100

Recommended Spare Parts List		
Qty.	Part No.	Description
1	LE KP2463-1 MK 615-0603-15	Conduit - 15 ft
1	LE KP2463-2 MK 615-0603-25	Conduit - 25 ft
1	LE KP2463-3 MK 615-0603-50	Conduit - 50 ft
1	437-0253	Drive Roll Door
2	005-0694	Trigger Assy. Kit
2	005-0695	Potentiometer Assy. Kit
1	005-0699	Handle Kit
2	005-0701	Micro-Switch Assy. Kit
10	LE KP2219-1 MK 511-0101	Drive Roll
5	LE KP2220-1 MK 005-0686	Idler Roll Kit



**Drive Roll Removal Tool**  
**931-0100**



**Knurled Drive Roll**  
**LE P/N KP2219-1**  
**MK P/N 511-0101**



**Idler Roll Kit**  
**LE P/N KP2220-1**  
**MK P/N 005-0686**



**Micro Switch Assembly**  
**005-0701**



## Section E

## Troubleshooting

Trouble	Cause	Remedy
No wire feed at torch, feeder not operating, i.e. no slave motor or brake solenoid.	115/42 VAC Control fuse in feeder/Control box blown.	Replace fuse.
	Micro-switch defective/not being activated.	Replace switch. Check switch for operation.
	Broken electrical cable.	Check micro-switch wires for continuity.
No wire feed at torch, feeder operating properly.	24 VAC Control fuse in feeder/Control box blown.	Check motor leads for shorts; then replace fuse.
	Bad potentiometer.	Check potentiometer with meter.
	Broken Electrical Cable.	Check motor and potentiometer wires for continuity.
	Bad Speed control/PCB	See specific cabinet/control box owners manual for speed control operation.
Wire feeds, but welding wire is not energized.	Loose or no cable connections.	Check all power connections.
	Contactor control cable loose or in wrong position.	Check power supply owners manual for location and type of contactor signal required.
	Welding power source.	Check power source.
Wire feeds erratically.	Dirty or worn conduit.	Blow out or replace conduit.
	Wrong size contact tip.	See Contact tip table.
	Idler roll stuck.	Check for lock washer under idler roll, or replace if damaged.
Wire feeds one speed only.	Bad potentiometer.	Check with meter.
	Broken electrical cable.	Check potentiometer wires for continuity or short.
	Bad speed control.	See specific cabinet/control owners manual for speed control operation.
Wire walks out of drive rolls.	Idler roll upside-down.	Place groove in idler roll toward top.
	Rear wire guide missing.	Replace wire guide.

## Troubleshooting Guide

Regardless of which torch or feeder used, all MK Products' push-pull guns operate on the same principle. The slave motor in the feeder runs at a fast, constant speed, but has very low torque. It is always trying to feed more wire than the torch motor wants, and when the motor gets all it wants, it slows the slave motor, preventing a bird's nest. Because of the low torque produced by the slave motor, a brake system is used to prevent wire overrun rather than tension. The drag adjustment in the feeder is used simply to keep the wire slightly taut, so it will not pull off the spool while feeding wire.

The high torque 24VDC torch motor is controlled by a solid state speed control located in the feeder, and a pot located in the torch. The torch motor, potentiometer, and micro switch are connected to the cabinet/control box via a control cable and Amphenol connector. If this cable becomes damaged, a variety of symptoms can occur, depending on which wire(s) break. To test, check each wire for continuity and shorts.

Remember, the micro switch in the torch activates both the slave motor and torch motor circuits in the cabinet. Therefore, if the slave motor and brake solenoid operate, but the torch does not, look more toward the torch motor's 24V circuits, speed control, control cable, or the torch motor. If nothing operates, look more toward the slave motor's input, micro switch leads, or micro switch.

## Testing The Gun

*Reference the "W" clocked torch wiring diagram on the Python® Electrical Diagram for information about pin-outs and locations.*

### Motor Check

Remove the torch connector from the cabinet.

Using the torch Amphenol connector, check the resistance across pins "A" and "B" (motor leads). The resistance across the motor should be between **5 - 10 ohms** as the potentiometer is turned.

If an open circuit or short exist, check the motor leads and motor independently.

### Testing the Potentiometer - "W" Clocked

Using the torch Amphenol connector, check the resistance across pin "D" (wiper) and pin "C". The resistance should vary from **0 - 5K ohms** as the potentiometer is turned.

Check the resistance across pin "D" (wiper) and pin "G". The resistance should vary from **5K - 0 ohms** as the potentiometer is turned.

### Testing the Micro Switch

Using the torch Amphenol connector, check for continuity across pins "E" and "F" when the trigger is pressed.

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**Section F**

**Appendices**

**Diagrams / Parts List**

Python-*Plus* Exploded View ..... 12

Python-*Plus* Bill of Material ..... 13

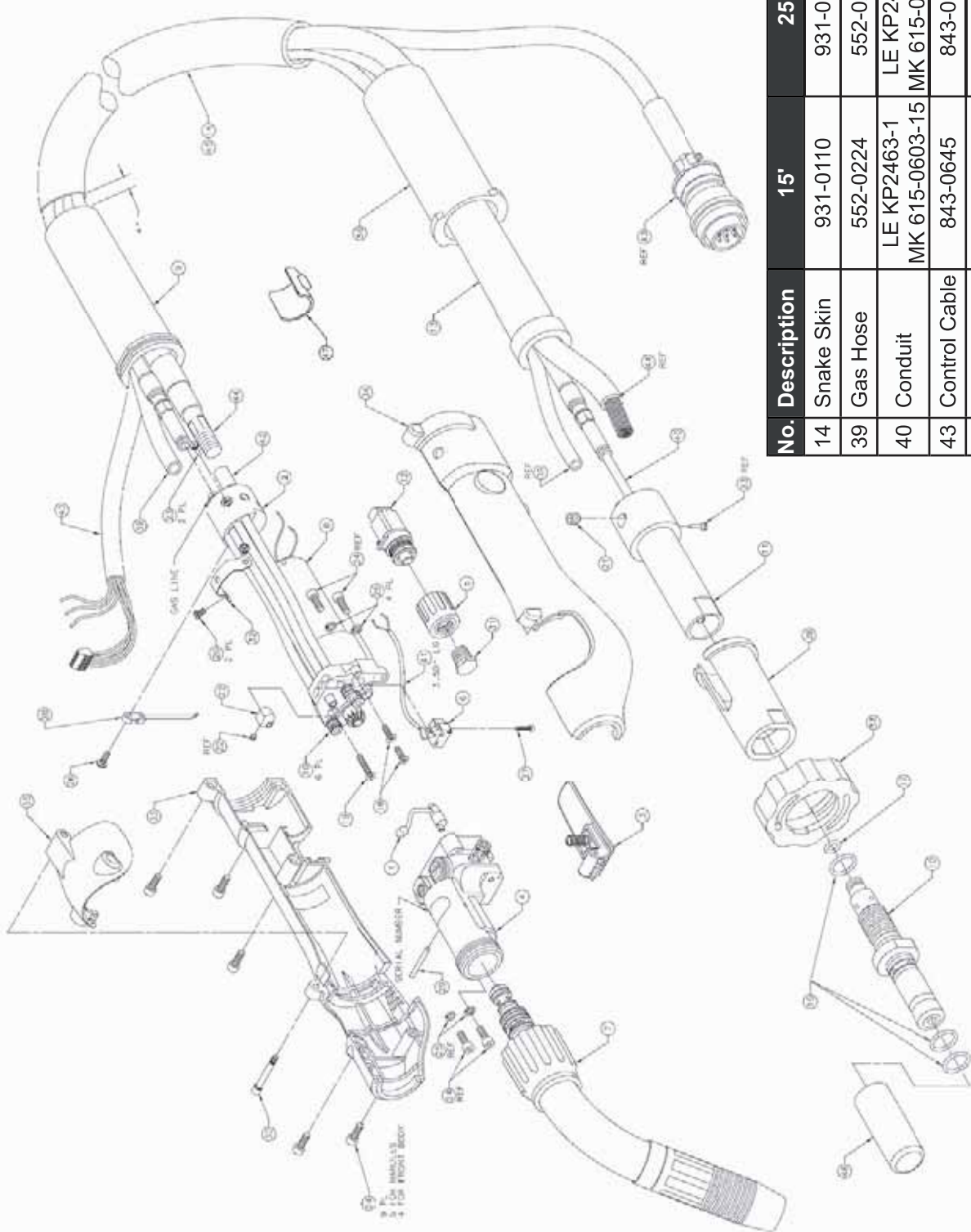
Python Front Body Assembly ..... 14

A/W Barrel Assembly..... 15

Python-*Plus* Electrical ..... 16



# **Python-Plus Exploded View** P/N 001-1480

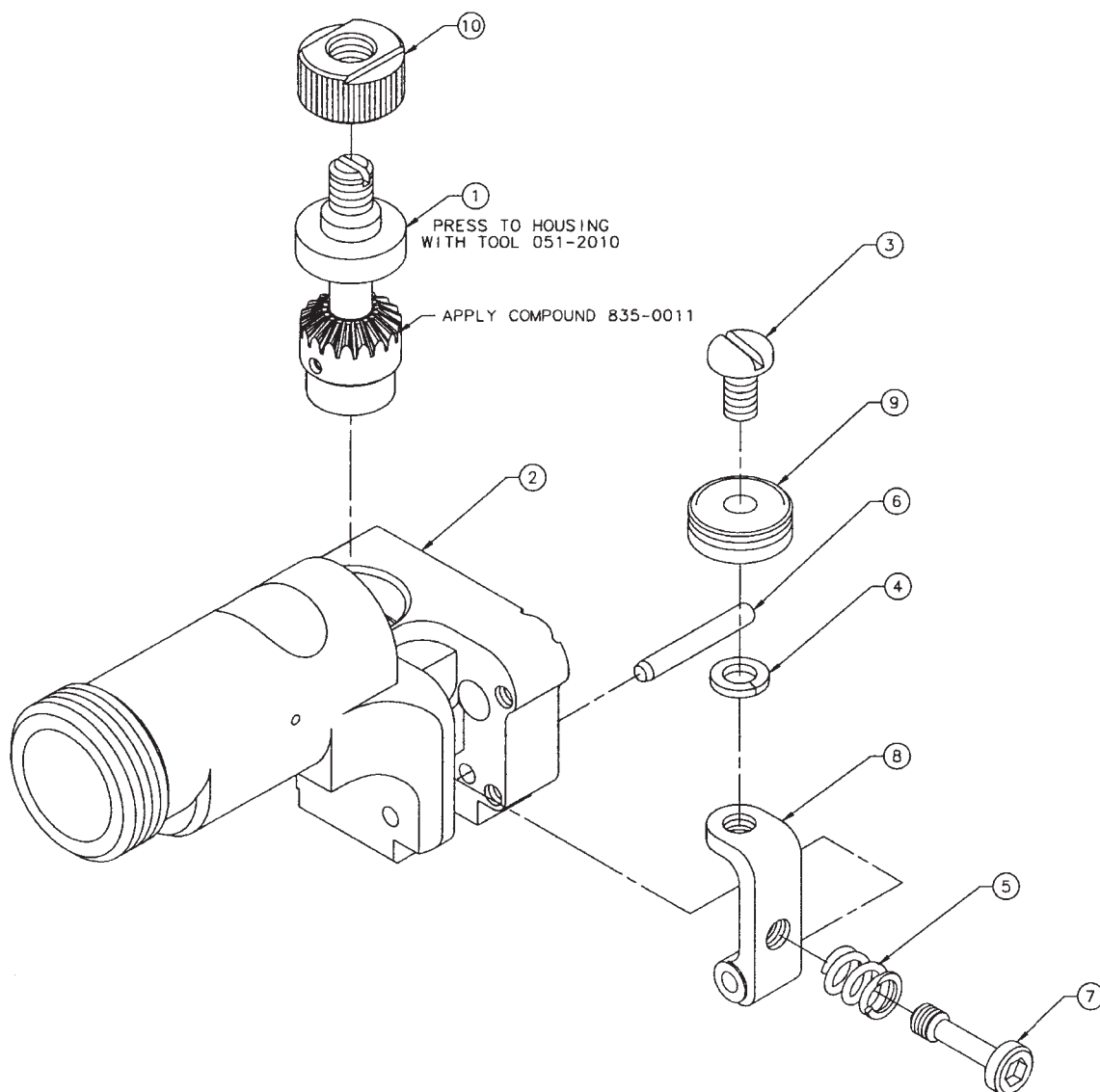


No.	Description	15'	25'	50'
14	Snake Skin	931-0110	931-0122	931-0123
39	Gas Hose	552-0224	552-0225	552-0226
40	Conduit	LE KP2463-1 MK 615-0603-15	LE KP2463-2 MK 615-0603-25	LE KP2463-3 MK 615-0603-50
43	Control Cable	843-0645	843-0646	843-0647
44	Power Cable	843-0619	843-0620	843-0621

## Python-Plus Parts List

No.	Qty	Part No.	Description	No.	Qty	Part No.	Description
1	1	002-0629	Cam Idler Arm Assy	25	4	333-0005	Spring Lock Washer #6
2	1	002-0631	Brazed Rear Body	26	1	336-0020	Screw PH Phil 4-40 x 5/16 SST
3	1	005-0694	Trigger Kit	27	1	338-0153	Screw SHC 1-72 x 3/8
4	1	003-2108	Front Body Assy	28	1	411-0243	Eyelet Tie Wrap
5	1	003-2125	Knob Pot Assy	29	6	421-0018	Pin Dowel 3/32 x 7/8 SST
6	1	005-0701	Micro Swx Kit	30	1	431-1622	Shoulder Screw 1/8 x 4-40
7	1	003-2147	Barrel 60° A/W Assy	31	1	431-1637	Hex Screw 3/8-20 x 3/8
8	1	211-0077	Motor Pittman	32	1	435-1585	Strap Motor
9	1	003-2153	Torch Boot Assy	33	1	005-0699	Handle Kit: includes line items 24, 30, and 35
10	1	002-0657	Brazed Power/Gas Connector Assy	34			
11	1	002-0658	Brazed Power/Gas Adaptor Assy	35	1	437-0253	Door Molded
12	1	005-0695	Pot Assy Kit	36	1	437-0267	Molded Cable Handle
13	1	301-0108	Boot Cable Support	37	1	437-0272	Nut Handle Adaptor
14	1	REF TABLE	Snake Skin	38	1	437-0273	Molded Tail Piece
15	3	303-0010	O-Ring 2-014 0.489 ID x 0.629 OD	39	1	REF TABLE	Gas Hose
16	6	303-0096	O-Ring 2-007 Buna N	40	1	REF TABLE	Conduit Assy
17	1	303-0516	O-Ring 2-010 0.239 ID x 0.07 THK	41	0.30 FT	737-0048	Tube Insulation 9 AWG Clear
18	2	319-0254	Screw FH Phil 82 4-40 x 3/8 SST	42	1	751-0020	Cap Plug 0.218 ID x 0.50 LG
19	1	319-0258	Screw FH Phil 82 4-40 x 5/8 SST	43	1	REF TABLE	Cable Ctrl Assy
20	2	320-0084	Screw Button 4-40 x 3/16 ST	44	1	REF TABLE	Cable Power Assy
21	2	321-0518	SSCR FP 1/4 - 20 x 3/8	45	2	261-0094	Wrap Spiral Cord
22	1	003-2209	Wire Guide Assy	46	1	751-0021	Cap, Vinyl 0.625 ID x 2.00 LG
23	2	321-1104	Set Screw Mod #8-32	47	1	437-0268	Cover Knob
24	9	328-0012	Screw SHC 6-32 x 3/8				

## Python Front Body Assembly P/N 003-2108

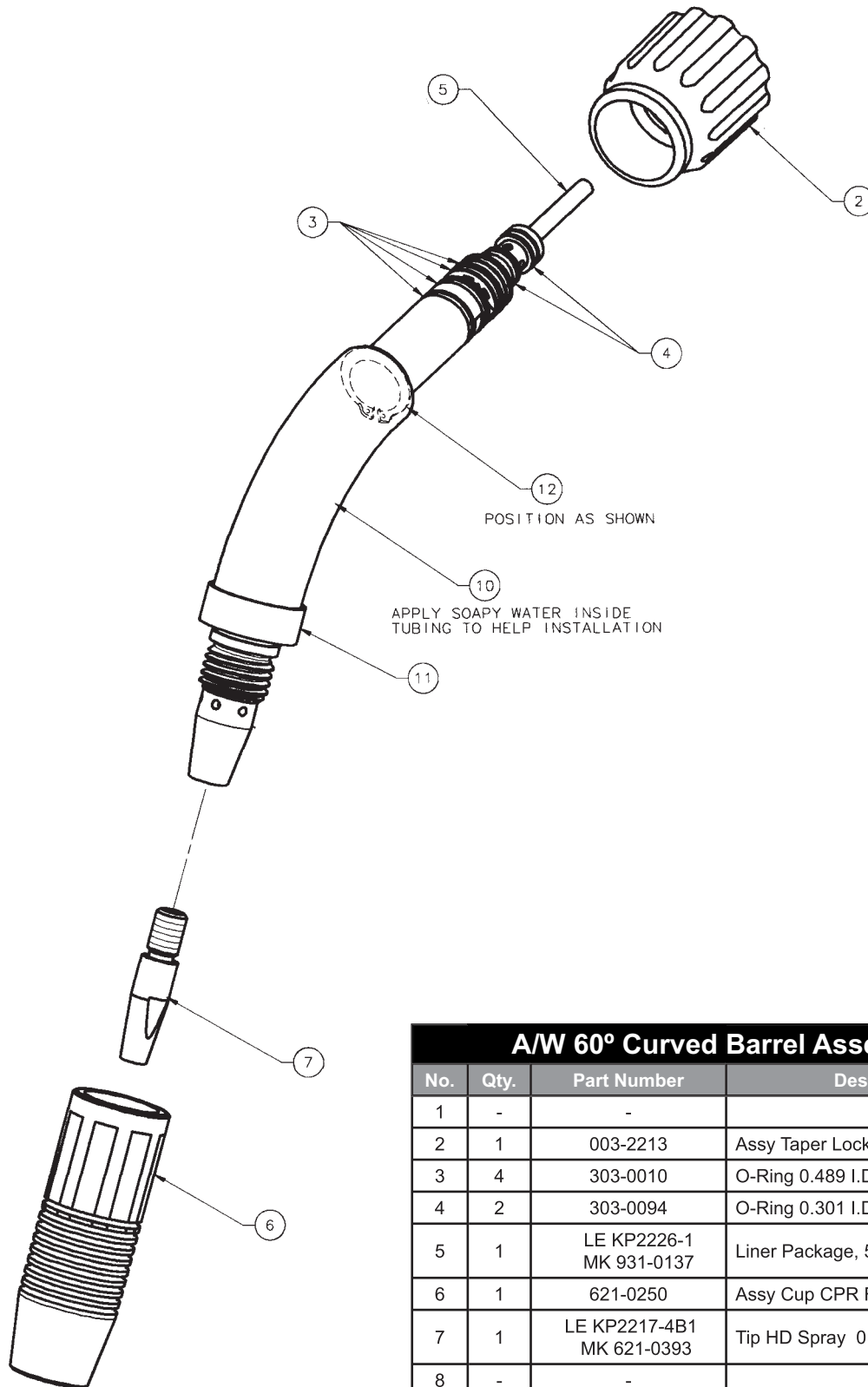


NOTE: Items #3, 4 and 9 can be ordered together in Kit P/N LE KP2220-1, MK 005-0686

### Python Front Body Assembly

No.	Qty	P/N	Description	No.	Qty	P/N	Description
1	1	003-2083	Output Shaft Assembly	6	1	421-0525	1/8 x 7/8 SST Dowel Pin
2	1	003-2106	Body Assembly	7	1	431-1663	Idler Adjusting Screw
3	1	325-0206	10-24 x 3/8 PH Screw	8	1	431-1598	Idler Arm
4	1	333-0082	# 10 Lock Washer	9	1	LE KP2220-1 MK 005-0686	Idler Wire Feed Assembly
5	1	419-0092	Compression Spring	10	1	LE KP2219-1 MK 511-0101	Drive Roll

**A/W Barrel Assembly**  
**P/N LE KP2225-1, MK 003-2147**

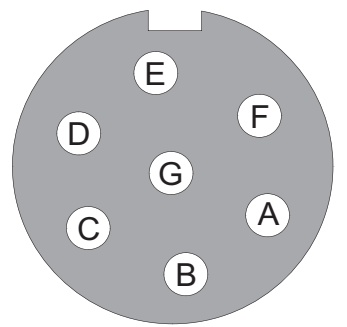


**A/W 60° Curved Barrel Assembly**

No.	Qty.	Part Number	Description
1	-	-	-
2	1	003-2213	Ass'y Taper Lock
3	4	303-0010	O-Ring 0.489 I.D. x 0.070 Width
4	2	303-0094	O-Ring 0.301 I.D. x 0.070 Width
5	1	LE KP2226-1 MK 931-0137	Liner Package, 5 pieces
6	1	621-0250	Ass'y Cup CPR Finned #10
7	1	LE KP2217-4B1 MK 621-0393	Tip HD Spray 0.060
8	-	-	-
9	-	-	-
10	1	005-0696	Insulator Replacement Kit
11	1	431-1774	Cup Insulator
12	1	313-0091	Retaining Ring 5/8 Shaft

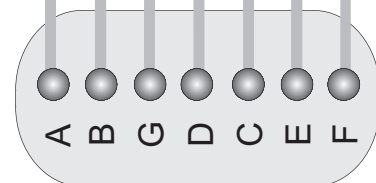


# Python Electrical



"W" Clocked  
Amphenol Connector  
Viewed from front of connector

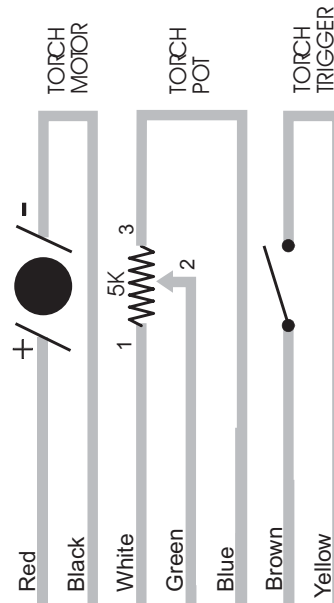
Cabinet End  
Amphenol Connector



Torch Lead

Red  
Black  
White  
Green  
Blue  
Brown  
Yellow

Torch Functions



# MK WARRANTY REPAIR STATIONS

for MK Products as of 9/14/05  
for most up-to-date list, please visit [www.mkproducts.com](http://www.mkproducts.com)

## **ALABAMA**

AIRGAS - SOUTH, INC.  
Birmingham, AL  
205/251-6835

DIXIE WELDING SUPPLY  
Attalla, AL  
256/538-6157

INDUSTRIAL WELDING SERVICES  
Quinton, AL  
205/674-3258

KIBRO, INC.  
Theodore, AL  
334/653-4672

WELDING ENGINEERING SUPPLY CO.  
Prichard, AL  
334/457-8681

WELDING MACHINE HOSPITAL  
Montgomery, AL  
334/832-9353

## **ALASKA**

FAIRBANKS AERO SERVICES  
Fairbanks, AK  
907/479-6666

RNR, INC. dba  
Rubey Engine & Electric  
Anchorage, AK  
907/336-5152

## **ARIZONA**

ALLSTATE ELECTRIC MOTOR CO.  
Phoenix, AZ  
602/233-0500

ARC DYNAMICS  
Yuma, AZ  
928/539-0003

PRAXAIR DISTRIBUTION, INC.  
Phoenix, AZ  
602/269-2151

VERN LEWIS WLDG. SUPPLY  
Phoenix, AZ  
602/252-0341

## **ARKANSAS**

APPLIED SERVICES, INC.  
Benton, AR  
501/860-6464

ARKANSAS WELDING IND'L SUPPLY  
Hot Springs, AR  
501/321-9922

EL DORADO WELDING & INDUSTRIAL  
SUPPLY  
El Dorado, AR  
870/863-4088

WELSCO  
Little Rock, AR  
501/372-2252

## **CALIFORNIA**

ADVANCED WELDER REPAIR  
Commerce, CA  
323/263-7383

AIRGAS - WEST, INC.  
Gardena, CA  
310/523-9355

ALL PHASE WELDER REPAIR & CONSULTING  
Sacramento, CA  
916/331-0595

ARC PRODUCTS  
San Diego, CA  
619/628-1022

ARCO WELDER REPAIR  
Santa Fe Springs, CA  
562/921-5240

ARK WELDER REPAIR  
Fresno, CA  
559/292-4714

CAL-WELD SUPPLY  
Fresno, CA  
209/445-0131

DELTA-TECH  
Sun Valley, CA  
818/767-4234

EMCO-EAST WELD'R REPAIR  
Concord, CA  
925/798-4411

FRESNO OXYGEN  
Fresno, CA  
559/233-6684

INDUSTRIAL ELECTRICAL CO  
Modesto, CA  
209/527-2800

INDUSTRIAL WELDER REPAIR  
LaPuente, CA  
626/961-7643

# MK WARRANTY REPAIR STATIONS

for MK Products as of 9/14/05  
for most up-to-date list, please visit [www.mkproducts.com](http://www.mkproducts.com)

## NESCO WELDING SUPPLY

Fontana, CA  
909/427-9670

## PRAXAIR DISTRIBUTION

(ARC RENTS)  
Signal Hill, CA  
562/989-3212

## PRAXAIR DISTRIBUTION, INC.

Bakersfield, CA  
661/321-9922

## R. J. KATES

San Diego, CA  
619/565-6960

## RED-D-ARC, INC.

Carson, CA  
310/233-3327

## SIMS-ORANGE WELDING SUPPLY

Santa Ana, CA  
714/549-9393

## SOUTHWEST WELDER REPAIR

Fontana, CA  
909/357-1661

## VERNON ELECTRIC

Covina, CA  
626/858-4750

## WESTEC WELDING EQUIPMENT REPAIR

Sacramento, CA  
916/924-5370

## **COLORADO**

### AIRGAS - INTERMOUNTAIN, INC.

Colorado Springs, CO  
719/473-1947

## WELDERS & EQUIP. SVC. & TESTING

Littleton, CO  
303/932-8755

## WESTERN SLOPE WELDER REPAIR

Grand Junction, CO  
970/243-9616

## **CONNETICUT**

### ABCO WELDING & INDUSTRIAL SUPPLY CO.

Waterford, CT  
800/962-0285

## TECH AIR

Milford, CT  
203/783-1834

## WELDER REPAIR AND RENTAL SERVICE

Durham, CT  
860-349-0864

## **DELAWARE**

### KEEN COMPRESSED GAS

New Castle, DE  
302/594-4555

### WARREN ELECTRIC CO., INC.

Seaford, DE  
302/629-9134

## **FLORIDA**

### A & I SPECIALTIES

Lehigh Acres, FL  
941/368-7435

### AAA GENERATOR & PUMP

Ft. Myers, FL  
941/332-1136

### ACTION WELDING SUPPLY

Jacksonville, FL  
904/786-2254

### AMVEL CORPORATION

Miami, FL  
305/592-5678

### ELECTRICAL WELDERS SERVICE

Orlando, FL  
407/999-5214

### HAUN SYSTEMS REPAIR, INC.

Winter Park, FL  
407/681-6064

### HOLOX

Ocala, FL  
352/351-4417

### J.K. CIRCUIT TECHNOLOGY

Boynton Beach, FL  
561/733-7859

### ROPER ELECTRIC MOTOR SERVICE

Panama City, FL  
850/769-6643

### SMITTY'S WELDER SERVICE

West Palm Beach, FL  
561/845-1224

### TRI-GAS

Miami, FL  
305/592-3180

### TRI-STATE SALES & LEASING

Lake City, FL  
904/397-3340

# MK WARRANTY REPAIR STATIONS

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for most up-to-date list, please visit [www.mkproducts.com](http://www.mkproducts.com)

## TRI-TECH

Sarasota, FL  
941/758-3825

## V.A. ELECTRICAL MOTORS CENTER, INC.

Hialeah, FL  
305/825-3327

## WELD DIRECT CORPORATION

Jacksonville, FL  
904/387-5664

## GEORGIA

### B&W INDUSTRIAL SERVICES

Augusta, GA  
706/738-8722

### Mc CULLOUGH ELEC. MOTOR SVC.

Atlanta, GA  
404/688-5251

## HAWAII

### DC ELECTRIC, INC.

Aiea, HI  
808/483-8900

## IDAHO

### NORCO

Boise, ID  
208/336-1643

### ROSSITER ELECTRIC

Idaho Falls, ID  
208/529-3665

## ILLINOIS

### CMS ELECTROMECHANICAL SERVICES, INC.

Galesburg, IL  
309/342-4125 – 888/964-3526

### FRED ARMS ELECTRIC MOTOR REPAIR

Stone Park, IL  
708/343-6262

### INDUSTRIAL WELDER REBUILDERS

Alsip, IL  
708/371-5688

### RELIABLE EQUIPMENT REPAIR

Hamel, IL  
618/633-5000

### ROCKFORD INDUSTRIAL WELDING SUPPLY

Rockford, IL  
815/226-1900

## INDIANA

### AGA GAS, INC.

Hammond, IN  
219/989-9030

### AIRGAS - MID AMERICA, INC.

Evansville, IN  
800/424-8905

### B & H ELECTRIC

Seymour, IN  
812/522-5607

### BRETT DIEHM HOAGLAND ELECTRIC, INC.

Fort Wayne, IN  
260-489-5990

### COX EQUIPMENT COMPANY

Indianapolis, IN  
317/241-8881

### EVANSVILLE ARMATURE, INC.

Evansville, IN  
812/428-9034

### HARRISON ELECTRIC, INC.

Michigan City, IN  
219/879-0444

### MODERN SUPPLY CO., INC.

Evansville, IN  
812/425-9353

### PRAXAIR DISTRIBUTION, INC.

Speedway, IN  
317/481-4550

### SUTTON-GARTEN COMPANY

Indianapolis, IN  
317/264-3236

## IOWA

### ARC SOURCE MIDWEST

Grimes, IA  
515/986-4610

### AIRGAS NORTH CENTRAL

Des Moines, IA  
515/266-1111

### CEDAR RAPIDS WELDING SUPPLY

Cedar Rapids, IA  
319/365-1466

### ELECTRICAL ENGRG. & EQUIPMENT

Des Moines, IA  
515/266-8890

### SUPERIOR WELDING SUPPLY

Waterloo, IA  
319/236-9660

# MK WARRANTY REPAIR STATIONS

for MK Products as of 9/14/05  
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WRIGHT WELDING SUPPLY  
Ft. Dodge, IA  
515/576-0640

## **KANSAS**

AEROFORM CORPORATION  
Coffeyville, KS  
620/251-1430

KANOX  
Hutchinson, KS  
316/665-5551

## **KENTUCKY**

DUPONT DYNAMICS  
Bellevue, KY  
859-655-9353

GENERAL WELDING PRODUCTS  
Louisville, KY  
502/635-5218

RED-D-ARC  
Lexington, KY  
800/245-3660

WELDING EQUIPMENT  
Louisville, KY  
502/636-0545

## **LOUISIANA**

GT SVCS OF MORGAN CITY  
Morgan City, LA  
985/385-4135

RED BALL OXYGEN CO.  
Shreveport, LA  
318/425-3211

SHAW OXYGEN CO., INC.  
Monroe, LA  
318/387-4115

WELDERS EQUIPMENT CO.  
Broussard, LA  
337/837-5701

WELDERS SUPPLY & EQUIP.  
Port Allen, LA  
225/346-4712

## **MAINE**

ADVANTAGE GASES & TOOLS  
Bangor, ME  
207/942-6393

ADVANTAGE GASES & TOOLS  
Portland, ME  
207/797-2733

ADVANTAGE GASES & TOOLS  
Lewiston, ME  
207/784-4588

MAINE OXY-ACETYLENE SUPPLY COMPANY  
Auburn, ME  
207/784-5788

## **MARYLAND**

CCM MECH/ELEC REPAIR SERVICE  
Owings, MD  
301/855-7508

## **MASSACHUSETTS**

AIMTEK WELDING SUPPLY  
Auburn, MA  
508/832-5035

## **MICHIGAN**

ANN ARBOR WELDING SUPPLY CO.  
Ypsilanti, MI  
734/572-0444

APEX WELDING GASES & SUPPLY  
Muskegon Heights, MI  
616/722-3185

AUTOMATIC WELD  
Midland, MI  
517/496-9245

GREAT LAKES EQUIPMENT  
Clare, MI  
517/386-4630

HAMILTON ELECTRIC CO.  
Saginaw, MI  
517/799-6291

PLYMOUTH WAYNE, INC.  
Wixom, MI  
248/735-7700

PURITY CYLINDER GASES, INC.  
Grand Rapids, MI  
616/532-2375

SAGINAW WELDING SUPPLY CO.  
Saginaw, MI  
517/793-9696

SIMPKINS ELECTRICAL SVC.  
Michigan Center, MI  
517/764-7766

SOUTHPARK WELDING  
Marysville, MI  
810/364-6521

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WELDING METALS, INC.  
Madison Heights, MI  
248/585-0480

WESAR COMPANY  
Three Rivers, MI  
616/483-9125

WILSON WELDING & MEDICAL GASES  
Warren, MI  
586/751-7400

## **MINNESOTA**

AIRGAS – NORTH CENTRAL  
Albert Lea, MN  
507/373-2411

CAPITOL CITY WELDING SUPPLY  
St. Paul, MN  
651/224-4843

CENTRAL McGOWAN  
St. Cloud, MN  
320/252-5292

MINNEAPOLIS OXYGEN CO.  
Minneapolis, MN  
612/588-8855

OXYGEN SERVICE CO.  
St. Paul, MN  
612/644-7273

PRAXAIR DISTRIBUTION, INC.  
St. Paul, MN  
651/603-1996

## **MISSOURI**

CEE-KAY SUPPLY, INC.  
St. Louis, MO  
324/644-3500

P.G. WALKER  
Springfield, MO  
417/862-1745

ROD'S SERVICE, INC.  
St. Louis, MO  
314/721-6000

## **MISSISSIPPI**

3D SUPPLIES, INC.  
Jackson, MS  
601/353-3330

KOMP IND'L & WELD'G SUPPLY  
Hattiesburg, MS  
601/649-5889

MID-SOUTH WELDING SUPPLY  
Meridian, MS  
601/483-9331

NORDAN SMITH WELDING SUPPLY  
Hattiesburg, MS  
601/545-1800

## **MONTANA**

VALLEY WELDERS SUPPLY  
Billings, MT  
406/256-3330

## **NEVADA**

SIERRA WELDING SUPPLY CO.  
Sparks, NV  
775/359-0542

## **NEW HAMPSHIRE**

WELDING SYSTEMS SVC.  
Raymond, NH  
603/895-4700

## **NEW JERSEY**

INDUSTRIAL ELECTRIC SERVICE CO.  
Hawthorne, NJ  
973/423-1212

## **NEW YORK**

DELO WELDING SUPPLY  
Syracuse, NY  
315/478-2188

DYNAMIC WELD'G & REPAIR  
Bayshore, NY  
631/643-1308

HAUN WELDING SUPPLY  
Syracuse, NY  
315/463-5241

JACKSON WELDING SUPPLY  
Rochester, NY  
585/235-2920

## **NORTH CAROLINA**

ADAMS WELDER REPAIR & ELECTRICAL  
SERVICE, INC.  
Nashville, NC  
252/459-1960

HOLOX LTD.  
Colfax, NC  
336/996-1974

M & L WELDER REPAIR  
Asheville, NC  
828/250-9353

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MACHINE & WELDING SUPPLY CO.  
Dunn, NC  
910/892-4016

MACHINE AND WELDING SUPPLY CO.  
Greenville, NC  
252/752-3089

MACHINE AND WELDING SUPPLY CO.  
Raleigh, NC  
919/772-9500

MACHINE AND WELDING SUPPLY CO.  
Winston-Salem, NC  
336/723-9651

NATIONAL WELDERS SUPPLY CO.  
High Point, NC  
910/882-1110

NATIONAL WELDERS SUPPLY CO.  
Charlotte, NC  
704/392-7317

## **NORTH DAKOTA**

PRAXAIR DISTRIBUTION, INC.  
Fargo, ND  
701/237-5233

## **OHIO**

AGA GASES, INC.  
Lima, OH  
419/228-2828

ALBRIGHT WELDING SUPPLY  
Wooster, OH  
330/264-2021

ALL ABOUT SERVICE  
Wickliffe, OH  
440/516-0303

ARC EQUIPMENT COMPANY  
Struthers, OH  
33/750-9353

ARC SERVICES, INC.  
Toledo, OH  
419/478-6204

BELAIR PRODUCTS, INC.  
Akron, OH  
330/253-3116

BIG RIVER ELECTRIC  
Gallipolis, OH  
740/446-4360

CnD MACHINE, INC.  
Canton, OH  
330/478-8811

ELECTRIC WELDER REPAIR  
Cuyahoga Heights, OH  
216/271-5600

MAINTENANCE UNLTD. & TOOL REPAIR  
Cincinnati, OH  
513/554-1313

O.E. MEYER CO.  
Sandusky, OH  
419/621-4201

OHIO AIR PRODUCTS  
Canton, OH  
330/821-2771

RICK'S WELDER REPAIR SERVICE  
Eastlake, OH  
440/269-1204

S.D. NOLD, INC.  
Lisbon, OH  
330/424-3134

SOUTHERN OHIO WELDER REPAIR  
Groveport, OH  
614/-836-2069

VALLEY NATIONAL GASES  
Cincinnati, OH  
513/241-5840

VALLEY NATIONAL GASES  
Lima, OH  
419/228-1008

VALLEY NATIONAL GASES  
Hilliard, OH  
614/771-1311

VALLEY NATIONAL GASES  
Toledo, OH  
419/241-9114

VOLLMER ELECTRIC CO.  
Columbus, OH  
614/476-8800

WEILER WELDING CO., INC.  
Dayton, OH  
937/222-8312

WELDINGHOUSE, INC.  
Cleveland, OH  
216/524-1955

## **OKLAHOMA**

AIRGAS MID-SOUTH  
Tulsa, OK  
918/582-0885



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## BILL'S WELDER REPAIR

Oklahoma City, OK  
405/232-4799

## MUNN SUPPLY

Enid, OK  
580/234-4120

## OKLAHOMA WELDERS SUPPLY

Madill, OK  
580/795-5561

## OREGON

### ARC SYSTEMS SERVICES

Central Point, OR  
541/665-2676

### E C COMPANY

dba ELECTRICAL CONSTRUCTION  
COMPANY  
Portland, OR  
800/452-1511

### INDUSTRIAL SOURCE

Eugene, OR  
541/344-1438

### IRONTECH WELDING & INDUSTRIAL SUPPLY, INC.

Portland, OR  
503/774-5145

### WELDER SERVICE & REPAIR

Redmond, OR  
541/548-8711

## PENNSYLVANIA

### ALLWELD EQUIPMENT REPAIR

Pittsburgh, PA  
412/821-8460

### BY DESIGN

Columbia, PA  
717/681-9494

### GEOVIC WELDING SUPPLY

Milton, PA  
717/742-9377

### J.A. CUNNINGHAM EQUIPMENT, INC.

Philadelphia, PA  
215/426-6650

### JOSEPH PINTO, JR. EQUIPMENT CO.

E. Lansdowne, PA  
610/259-4100

### POWER SOURCE REPAIR CO., INC.

Collingdale, PA  
610/532-6460

## VALLEY NATIONAL GASES

Pittsburgh, PA  
412/281-1835

## SOUTH CAROLINA

### CAROLINA WELDER SVC.

Lake City, SC  
843/687-0413

## TENNESSEE

### ARC-ONE WELDER REPAIR, INC.

East Ridge, TN  
423/894-9353

### INDUSTRIAL MACHINE REPAIRS

Rogersville, TN  
423/272-8199

### NATIONAL RENTAL & REPAIR

Knoxville, TN  
423/584-6390

### NEXAIR

Memphis, TN  
901/523-6821

### QUALITY WELD'G EQUIPMENT

Nashville, TN  
615/726-5282

### TRAMCO

Bristol, TN  
423/968-4499

## TEXAS

### AIRGAS - SOUTHWEST, INC.

Arlington, TX  
817/261-2967

### AIRGAS-SOUTHWEST, INC.

Austin, TX  
512/835-0202

### AIRGAS-SOUTHWEST, INC.

Corpus Christi, TX  
361/882-2531

### AIRGAS-SOUTHWEST, INC.

Houston, TX  
713/462-8027

### AIRGAS-SOUTHWEST, INC.

San Antonio, TX  
210/337-7255

### AIRGAS-SOUTHWEST, INC.

Waco, TX  
254/753-6443

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## DENISON OXYGEN

Denison, TX  
903/465-3369

## FT. WORTH WELDERS SUPPLY, INC.

Ft. Worth, TX  
817/332-8696

## GPC SERVICES, INC.

San Angelo, TX  
915/655-4545

## LEKTROTECH, INC.

Greenville, TX  
903/454-7146

## RITE-WELD SUPPLY, INC

Fort Worth, TX  
817/626-8237

## TexAir WELDING SUPPLY

Longview, TX  
903/238-9353

## VALLEY OUTDOOR POWER EQUIPMENT, INC.

Pharr, TX  
956/787-0469

## WELDING MACHINE & TORCH REPAIR

San Antonio, TX  
210/680-8390

## UTAH

### ARC SERVICES, LLC

West Valley City, UT  
801/975-1121

### C.W. SILVER INDUSTRIAL SERVICE

Salt Lake City, UT  
801/531-8888

### WOODLAND TECHNOLOGIES, INC.

Ogden, UT 84401  
801/334-0060

## VERMONT

### W.J. WELDING EQUIPMENT REPAIR, INC.

N. Clarendon, VT  
802/775-7422

## VIRGINIA

### ARC WELDERS, INC.

Ashland, VA  
804/798-1818

### ARCET EQUIPMENT CO.

Hampton, VA  
757/728-9353

## N.W. MARTIN CO.

Springfield, VA  
703/644-0120

## NORFOLK WELDERS SUPPLY

Norfolk, VA  
804/622-6571

## WASHINGTON

### AIRGAS - NORPAC, INC.

Tacoma, WA  
253/473-2282

### AIRGAS – NORPAC, INC.

Vancouver, WA  
360/574-5311

### A-L WELDING PRODUCTS

Tukwila, WA  
425/228-2218

### AMERICAN EQUIPMENT SERVICES

Kent, WA  
253/395-9947

### HARRIS ELECTRIC, INC.

Seattle, WA  
206/782-6668

### K & M ENTERPRISES

Enumclaw, WA  
253/335-7817

### OXARC, INC.

Spokane, WA  
509/535-7794

### PACIFIC WELDING SUPPLIES

Tacoma, WA  
253/572-5302

### PRECISION WELDER & ENGINE REPAIR

Seattle, WA  
206/382-6227

## WEST VIRGINIA

### CARDINAL SALES & SERVICE, INC.

Clarksburg, WV  
304/622-7590

### WILLARD C. STARCHER

Spencer, WV  
304/927-2520

## WISCONSIN

### INTERSTATE WELDING SALES CORP.

Appleton, WI  
920/734-7173

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## MOSINEE MACHINE & ELECTRIC

Mosinee, WI  
715/693-0858

## PRAXAIR DISTRIBUTION, INC.

Brookfield, WI  
414/938-6365

## RED-D-ARC APPLETON

Kaukauna, WI 54130  
920/759-4700

## VALLEY NATIONAL GASES

Milwaukee, WI  
414/281-9540

## WELDER REPAIR & SERVICE

Fredonia, WI  
262/692-3068

## **CANADA**

### A&A WELDER SERVICES LTD.

Saskatoon, Saskatchewan  
306/934-1601

### ARC & GENERATOR REPAIR

Garson, Ontario  
705/525-2141

### B. HARRIS WELDING SVCS.

Dartmouth, Nova Scotia  
902/468-6255

### BARRY HAMEL EQUIPMENT LTD.

Coquitlam, B.C.  
604/945-9313

### BEAUCE TECHNOLOGIES, INC.

St. Prosper, Quebec  
418/594-8852

### CHIPPINDALE ELECTRIC COMPANY

Cambridge, Ontario  
519/841-9353

### D-TECH WELD SERVICES

Regina, Saskatchewan  
306/586-9353

### ELECTRO-MÉCANIK, INC.

Sainte-Foy, Quebec  
418/683-1724

### GPR INDUSTRIES 1994 LTD.

Grande Prairie, Alberta  
780/532-5900

### HYPERDYNAMICS TECHNOLOGIES LTD.

Pickering, Ontario  
905/683-9938

## INDUSTRIAL ELECTRONIC SERVICES

Calgary, Alberta  
403/279-3432

## KHRISTIAN ELECTRIC

Calgary, Alberta T2C 2CB  
403/292-9111

## LADEL LTD.

Quebec  
819/376-6577

## LeBLANC ELECTRO-TECH, INC.

Boucherville, Quebec  
450/449-5244

## LINCOLN ELECTRIC COMPANY OF CANADA (ASG)

Mississauga, Ontario  
905/565-5600

## MACTECH Distributors LTD

Porterslake, Nova Scotia  
902/827-3926

## M.R.T. REPAIR CENTER, INC.

Montreal, Quebec  
514/648-0800

## OZARK ELECTRICAL MARINE LTD.

St. Johns, Newfoundland  
709/726-4554

## PEEL ENGINES

Mississauga, Ontario  
905/670-1535

## T.F. DAB WELDER SERVICES

Ajax, Ontario  
905/424-8754

## PROMOTECH ÉLECTRIQUE, INC.

Fleurimont, Quebec  
819/822-2111

## WELDERS SUPPLY

Winnipeg, Manitoba  
204/772-9476

## WELDERTECH

Calgary, Alberta  
403/279-3432

## WELDTEC

B.C.  
604/545-3886

## **CHINA**

### PHT GROUP COMPANY

Beijing, China  
86-10-6858 8395

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## **INDIA**

JSK SYSTEMS  
Andheri (W), Mumbai  
011-91-39-574-384

			
<b>WARNING</b>	<ul style="list-style-type: none"> <li>Do not touch electrically live parts or electrode with skin or wet clothing.</li> <li>Insulate yourself from work and ground.</li> </ul>	<ul style="list-style-type: none"> <li>Keep flammable materials away.</li> </ul>	<ul style="list-style-type: none"> <li>Wear eye, ear and body protection.</li> </ul>
Spanish <b>AVISO DE PRECAUCION</b>	<ul style="list-style-type: none"> <li>No toque las partes o los electrodos bajo carga con la piel o ropa mojada.</li> <li>Aísiense del trabajo y de la tierra.</li> </ul>	<ul style="list-style-type: none"> <li>Mantenga el material combustible fuera del área de trabajo.</li> </ul>	<ul style="list-style-type: none"> <li>Protégase los ojos, los oídos y el cuerpo.</li> </ul>
French <b>ATTENTION</b>	<ul style="list-style-type: none"> <li>Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension.</li> <li>Isolez-vous du travail et de la terre.</li> </ul>	<ul style="list-style-type: none"> <li>Gardez à l'écart de tout matériel inflammable.</li> </ul>	<ul style="list-style-type: none"> <li>Protégez vos yeux, vos oreilles et votre corps.</li> </ul>
German <b>WARNUNG</b>	<ul style="list-style-type: none"> <li>Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung!</li> <li>Isolieren Sie sich von den Elektroden und dem Erdboden!</li> </ul>	<ul style="list-style-type: none"> <li>Entfernen Sie brennbares Material!</li> </ul>	<ul style="list-style-type: none"> <li>Tragen Sie Augen-, Ohren- und Körperschutz!</li> </ul>
Portuguese <b>ATENÇÃO</b>	<ul style="list-style-type: none"> <li>Não toque partes elétricas e electrodos com a pele ou roupa molhada.</li> <li>Isole-se da peça e terra.</li> </ul>	<ul style="list-style-type: none"> <li>Mantenha inflamáveis bem guardados.</li> </ul>	<ul style="list-style-type: none"> <li>Use proteção para a vista, ouvido e corpo.</li> </ul>
Japanese <b>注意事項</b>	<ul style="list-style-type: none"> <li>通電中の電気部品、又は溶材にヒツやぬれた布で触れないこと。</li> <li>施工物やアースから身体が絶縁されている様にして下さい。</li> </ul>	<ul style="list-style-type: none"> <li>燃えやすいものの側での溶接作業は絶対にしてはなりません。</li> </ul>	<ul style="list-style-type: none"> <li>目、耳及び身体に保護具をして下さい。</li> </ul>
Chinese <b>警告</b>	<ul style="list-style-type: none"> <li>皮肤或湿衣物切勿接触带电部件及焊缝。</li> <li>使你自已与地面和工件绝缘。</li> </ul>	<ul style="list-style-type: none"> <li>把一切易燃物品移离工作场所。</li> </ul>	<ul style="list-style-type: none"> <li>佩戴眼、耳及身体劳动保护用具。</li> </ul>
Korean <b>위험</b>	<ul style="list-style-type: none"> <li>전도체나 용접봉을 젖은 환경 또는 피부로 절대 접촉치 마십시오.</li> <li>모재와 접지를 접촉치 마십시오.</li> </ul>	<ul style="list-style-type: none"> <li>인화성 물질을 접근시키지 마십시오.</li> </ul>	<ul style="list-style-type: none"> <li>눈, 귀와 몸에 보호장구를 착용하십시오.</li> </ul>
Arabic <b>تحذير</b>	<ul style="list-style-type: none"> <li>لا تلمس الأجزاء التي يمر بها التيار الكهربائي أو الأقطار بجلد الجسم أو بالملابس المبللة بالماء.</li> <li>ضع عازلاً على جسمك خلال العمل.</li> </ul>	<ul style="list-style-type: none"> <li>ضع المواد القابلة للاشتعال في مكان بعيد.</li> </ul>	<ul style="list-style-type: none"> <li>ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.</li> </ul>

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTION FOR THIS EQUIPMENT AND THE CONSUMABLES TO BE USED AND FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.

SE RECOMIENDA LEER Y ENTENDER LAS INSTRUCCIONES DEL FABRICANTE PARA EL USO DE ESTE EQUIPO Y LOS CONSUMIBLES QUE VA A UTILIZAR, SIGA LAS MEDIDAS DE SEGURIDAD DE SU SUPERVISOR.

LISEZ ET COMPRENEZ LES INSTRUCTIONS DU FABRICANT EN CE QUI REGARDE CET EQUIPMENT ET LES PRODUITS A ETRE EMPLOYES ET SUIVEZ LES PROCEDURES DE SECURITE DE VOTRE EMPLOYEUR.

LESEN SIE UND BEFOLGEN SIE DIE BETRIEBSANLEITUNG DER ANLAGE UND DEN ELEKTRODENEINSATZ DES HERSTELLERS. DIE UNFALLVERHÜTUNGSVORSCHRIFTEN DES ARBEITGEBERS SIND EBENFALLS ZU BEACHTEN.

			
<ul style="list-style-type: none"> <li>● Keep your head out of fumes.</li> <li>● Use ventilation or exhaust to remove fumes from breathing zone.</li> </ul>	<ul style="list-style-type: none"> <li>● Turn power off before servicing.</li> </ul>	<ul style="list-style-type: none"> <li>● Do not operate with panel open or guards off.</li> </ul>	<b>WARNING</b>
<ul style="list-style-type: none"> <li>● Los humos fuera de la zona de respiración.</li> <li>● Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases.</li> </ul>	<ul style="list-style-type: none"> <li>● Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio.</li> </ul>	<ul style="list-style-type: none"> <li>● No operar con panel abierto o guardas quitadas.</li> </ul>	Spanish <b>AVISO DE PRECAUCION</b>
<ul style="list-style-type: none"> <li>● Gardez la tête à l'écart des fumées.</li> <li>● Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail.</li> </ul>	<ul style="list-style-type: none"> <li>● Débranchez le courant avant l'entretien.</li> </ul>	<ul style="list-style-type: none"> <li>● N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés.</li> </ul>	French <b>ATTENTION</b>
<ul style="list-style-type: none"> <li>● Vermeiden Sie das Einatmen von Schweißrauch!</li> <li>● Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes!</li> </ul>	<ul style="list-style-type: none"> <li>● Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!)</li> </ul>	<ul style="list-style-type: none"> <li>● Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen!</li> </ul>	German <b>WARNUNG</b>
<ul style="list-style-type: none"> <li>● Mantenha seu rosto da fumaça.</li> <li>● Use ventilação e exaustão para remover fumo da zona respiratória.</li> </ul>	<ul style="list-style-type: none"> <li>● Não opere com as tampas removidas.</li> <li>● Desligue a corrente antes de fazer serviço.</li> <li>● Não toque as partes elétricas nuas.</li> </ul>	<ul style="list-style-type: none"> <li>● Mantenha-se afastado das partes moventes.</li> <li>● Não opere com os painéis abertos ou guardas removidas.</li> </ul>	Portuguese <b>ATENÇÃO</b>
<ul style="list-style-type: none"> <li>● ヒュームから顔を離すようにして下さい。</li> <li>● 換気や排煙に十分留意して下さい。</li> </ul>	<ul style="list-style-type: none"> <li>● メンテナンス・サービスに取りかかる際には、まず電源スイッチを必ず切して下さい。</li> </ul>	<ul style="list-style-type: none"> <li>● パネルやカバーを取り外したまま機械操作をしないで下さい。</li> </ul>	Japanese <b>注意事項</b>
<ul style="list-style-type: none"> <li>● 頭部遠離煙霧。</li> <li>● 在呼吸區使用通風或排風器除煙。</li> </ul>	<ul style="list-style-type: none"> <li>● 維修前切斷電源。</li> </ul>	<ul style="list-style-type: none"> <li>● 儀表板打開或沒有安全罩時不準作業。</li> </ul>	Chinese <b>警告</b>
<ul style="list-style-type: none"> <li>● 얼굴로부터 용접가스를 멀리하십시오.</li> <li>● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시오.</li> </ul>	<ul style="list-style-type: none"> <li>● 보수전에 전원을 차단하십시오.</li> </ul>	<ul style="list-style-type: none"> <li>● 관널이 열린 상태로 작동치 마십시오.</li> </ul>	Korean <b>위험</b>
<ul style="list-style-type: none"> <li>● أبعد رأسك بعيداً عن الدخان.</li> <li>● استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها.</li> </ul>	<ul style="list-style-type: none"> <li>● القطع التيار الكهربائي قبل القيام بأية صيانة.</li> </ul>	<ul style="list-style-type: none"> <li>● لا تشغل هذا الجهاز إذا كانت الاغطية الحديدية الواقية ليست عليه.</li> </ul>	Arabic <b>تحذير</b>

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使う機械や溶材のメーカーの指示書をよく読み、まず理解して下さい。そして貴社の安全規定に従って下さい。

請詳細閱讀並理解製造廠提供的說明以及應該使用的銀焊材料，並請遵守貴方的有關勞動保護規定。

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اقرأ بتمعن وافهم تعليمات المصنع المنتج لهذه المعدات والمواد قبل استعمالها واتبع تعليمات الوقاية لصاحب العمل.

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# LIMITED WARRANTY

**Effective May 1, 2005**

This warranty supersedes all previous MK Products warranties and is exclusive, with no other guarantees or warranties expressed or implied.

**LIMITED WARRANTY** - MK Products, Inc., Irvine, California warrants that all new and unused equipment furnished by MK Products is free from defects in workmanship and material as of the time and place of delivery by MK Products. No warranty is made by MK Products with respect to trade accessories or other items manufactured by others. Such trade accessories and other items are sold subject to the warranties of their respective manufacturers, if any.

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MK Products shall, exclusively remedy the limited warranty or any duties with respect to the quality of goods, based upon the following options:

- (1) repair
- (2) replacement
- (3) where authorized in writing by MK Products, the reasonable cost of repair or replacement at our Irvine, California plant.

As a matter of general policy only, MK Products may honor an original user's warranty claims on warranted equipment in the event of failure resulting from a defect within the following periods from the date of delivery of equipment to the original user:

- 1. Power Supplies and Wire Feed Cabinets ..... 3 years
- 2. Weldheads, Positioners, Prince XL and Prince XL Spool Guns, Python, CobraMAX, Cobra SX ..... 1 year
- 3. Sidewinder® Spool Gun, Prince SG Spool Guns, Modules ..... 180 days
- 4. Repairs/Exchanges/Parts ..... 90 days

Classification of any item into the foregoing categories shall be at the sole discretion of MK Products. Notification of any failure must be made in writing within 30 days of such failure.

A copy of the invoice showing the date of sale must accompany products returned for warranty repair or replacement.

All equipment returned to MK Products for service must be properly packaged to guard against damage from shipping. MK Products will not be responsible for any damages resulting from shipping.

Normal surface transportation charges (one way) for products returned for warranty repair or replacement will be borne by MK Products, except for products sold to foreign markets.

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DATE: May 1, 2005



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